



Docket No. 00279.308US1

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**Clean Version of the Amended Claims**

**PASSIVE TELEMETRY SYSTEM FOR IMPLANTABLE MEDICAL DEVICE**

Applicant: William R. Mass et al.

Serial No.: 09/828,460

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Please replace claims 1, 3, 4, 6 – 12 and 14 - 17 with their corresponding claims, as amended, below:

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1. (Once Amended) A telemetry system for enabling transfer of message data from an implantable medical device to an external device, comprising:

a1 an antenna and a transmitter coupled to the external device for transmitting a radio-frequency carrier signal to the implantable device;

an antenna incorporated as part of the implantable device;

a tuning circuit incorporated as part of the implantable device for adjusting the impedance of the implantable device antenna in a time varying manner so as to phase modulate the radio-frequency carrier signal reflected therefrom in accordance with the message data; and,

a receiver coupled to the external device for receiving the phase modulated carrier signal reflected from the antenna of the implantable device and extracting the message data therefrom.

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a2 3. (Once Amended) The system of claim 1 further comprising a receiver incorporated as part of the implantable device for receiving a radio-frequency carrier modulated with digital data from the external device.

4. (Once Amended) The system of claim 1 wherein the tuning circuit comprises a symbol encoder for encoding the message data into corresponding voltage level symbols that are used to adjust the impedance of the implantable device antenna in a time varying manner so that the radio-frequency carrier signal is reflected with a phase-shift corresponding to each symbol.

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6. (Once Amended) The system of claim 5 wherein the voltage-controlled capacitance is a varactor diode.

7. (Once Amended) The system of claim 4 wherein the message data is encoded into binary symbols by the symbol encoder such that the reflected radio-frequency carrier is modulated with binary phase-shift keying.

a<sup>3</sup> 8. (Once Amended) The system of claim 4 wherein the message data is encoded into four symbols by the symbol encoder such that the reflected radio-frequency carrier is modulated with quadrature phase-shift keying.

9. (Once Amended) The system of claim 4 wherein the external device receiver comprises a demodulator and a symbol decoder for recovering the message data from the reflected radio-frequency carrier signal.

10. (Once Amended) The system of claim 9 wherein the demodulator is a synchronous demodulator.

11. (Once Amended) The system of claim 10 wherein the external device generates a reference carrier signal that is correlated with the reflected radio-frequency signal by the synchronous demodulator.

12. (Once Amended) The system of claim 9 wherein the implantable device differentially encodes the message data such that symbols are represented in the modulated carrier by the phase change from one symbol period to another.

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14. (Once Amended) The system of claim 13 wherein the tuning circuit phase modulates the radio-frequency carrier reflected from the implantable device with differential binary phase-shift keying.

15. (Once Amended) The system of claim 13 wherein the tuning circuit phase modulates the radio-frequency carrier reflected from the implantable device with differential quadrature phase-shift keying.

a4 16. (Once Amended) A method for enabling data transfer from an implantable medical device to an external device, comprising:

transmitting a radio-frequency carrier signal from an antenna of the external device to an antenna of the implantable device;

adjusting the impedance of the implantable device antenna in a time varying manner so as to phase modulate the radio-frequency carrier signal reflected therefrom in accordance with a digital data signal; and,

receiving the phase modulated carrier signal reflected from the implantable device antenna at the external device and extracting the digital data signal therefrom.

17. (Once Amended) The method of claim 16 further comprising transmitting the radio-frequency carrier signal at a frequency such that a significant portion of the radio-frequency energy emitted by the external device antenna and reflected by the implantable device antenna is far-field radiation.

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